

REMARKS

In the Office Action dated September 25, 2006 patentability of claims 1-19 was addressed. Claims 1-19 were rejected under 35 U.S.C. §101. Claims 1-4, 7-11, 14-17, and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Agrawal et al.*, U.S. Patent No. 5,832,475, in view of *Chaudhuri et al.*, U.S. Patent No. 6,842,753. Claims 5-6, 12-13, and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Agrawal et al.*, U.S. Patent No. 5,832,475, in view of *Chaudhuri et al.*, U.S. Patent No. 6,842,753, and further in view of *Dageville et al.*, U.S. Patent Publication No. 2003/0065688.

I. Rejection of Claims 1-19 under 35 U.S.C. §101

In the Office Action dated September 25, 2006, the Examiner rejected claims 1-19 under 35 U.S.C. §101 indicating the claims are directed to non-statutory subject matter. More specifically, the Examiner has indicated that the language of claims 1-2 and 4-6 fail to recite a tangible results. Applicants have amended claims 1, 7, 14, and 19 to claim a tangible result for estimating the result size of a Group-By operation. The amendment to the claims does not add new subject matter to the application. Support for the amendment can be found in the specification on page 11, lines 19-24. Accordingly, based upon the amendment to claims 1, 7, 14, and 19, Applicants respectfully requests removal of the rejection of claims 1-19 under 35 U.S.C. §101.

II. Rejection of Claims 1-4, 7-11, 14-17, and 19 under 35 U.S.C. §103(a)

In the Office Action dated September 25, 2006, the Examiner rejected claims 1-4, 7-11, 14-17, and 19 under 35 U.S.C. §103(a) over *Agrawal et al.* in view of *Chaudhuri et al.*

U.S. Patent No. 5,832,475 to *Agrawal et al.* pertains to a method and system for performing database queries including Group-By operations. More specifically, *Agrawal et al.* pertains to a data cube, *i.e.* data structure, for expediting execution of Group-By operations in queries. One element disclosed in *Agrawal et al.* is a mathematical algorithm to estimate the size

of a Group-By operation. This element is disclosed on Col. 15, lines 23 - Col. 16, line 20. However, there is no mention in *Agrawal et al.* that their calculation takes into account the columns in a group of tables in the Group-By operation. As noted in Applicants' independent claims, Applicants' invention calculates cumulative selectivity based upon the individual selectivity of each column in a group of tables. In fact, there is no mention of the individual terms "cumulative" or "selectivity" in the entire patent of *Agrawal et al.*, and there is no mention of utilizing the columns in a group of tables when estimating the size of a Group-By operation.

U.S. Patent No. 6,842,753 to *Chaudhuri et al.* relates to conducting queries on data sets. As noted by the Examiner, *Chaudhuri et al.* identifies and indexes outlier values in a query - values that occur in a low frequency. *Chaudhuri et al.* executes the query on the outlier values and then combines the outlier results with the non-outlier results to approximate the size of the query.

It is accepted that for a rejection under 35 U.S.C. §103(a) to stand, there must be a suggestion or motivation in the references themselves to modify the reference or combine the teachings.¹ "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure".² As noted by the Examiner, *Agrawal et al.* fails to teach the tools used by Applicants to estimate the result size of the Group-By operation. More specifically, as noted by the Examiner, *Agrawal et al.* does not teach or suggest multiplying the calculated cumulative selectivity factor by an input size of the operation as claimed by Applicants.³ The Examiner has brought in the *Chaudhuri et al.* patent to support the mathematical operation as claimed by Application. Although *Chaudhuri et al.* teaches combining results to approximate the output size of a query, *Chaudhuri et al.* does not teach that this is conducted by multiplying a calculated cumulative selectivity by an input size

¹ See MPEP §2143.

² MPEP §2143, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

³ See Office Action, page 4, line 6.

of the query. In fact, *Chaudhuri et al.* teaches identifying datasets in the query utilizing values that occur with low frequency.

Applicants contend that there is no motivation for combining the prior art references to negate patentability herein. The motivation for such a combination stems from the language in Applicants' claims. Clearly, *Agrawal et al.* is the primary reference and *Chaudhuri et al.* is the secondary reference being applied by the Examiner. *Agrawal et al.* teaches conducting a query on a database with a Group-By operation, as claimed by Applicants. There is no teaching or suggestion in *Agrawal et al.* to modify their invention for the specific mathematical model to estimate the result size of the Group-By operation as claimed by Applicants.

Modifying the teaching of *Agrawal et al.* for applying the omitted mathematical operation as claimed by Applicants would go against the teaching of *Agrawal et al.* Applicants' invention focuses on a specific mathematical model for estimating a result size of a Group-By operation and applying that estimated result to a memory allocation, whereas *Agrawal et al.* does not teach the mathematical model as claimed by Applicants. It is clearly understood that different mathematical models will produce different results. By changing either a factor or an operator in the model, the model will yield different results. The MPEP provides:

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352).⁴

⁴ MPEP §2143.01.

Similarly, the suggested combination of *Agrawal et al.* with *Chaudhuri et al.* would yield a different mathematical model than that contemplated or envisioned by *Agrawal et al.* which in turn would yield different results than produced by *Agrawal et al.* Accordingly, it is Applicants' position that there is no motivation present in *Agrawal et al.* to be modified in the manner as claimed by Applicants.

It is clear that the Examiner is taking the elements of Applicants' pending claims and combining them in an improper manner. "It is impermissible to use the claimed invention as an instructions manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious."⁵ Yet that is the very process that the Examiner has attempted to undertake. Most patents may be considered combination patents in which different elements are combined from prior art to achieve a new and useful apparatus and/or method. Although Applicants' invention may appear to combine elements found in different prior art disclosures, the motivation to combine the references must be in the prior art not in Applicants' pending claims. There is no motivation in the prior art to combine the references, since such a combination would go against the teaching of *Agrawal et al.*

It is well settled that each statement of obviousness for the purpose of combining each of the references of record must be found and suggested in the references themselves and not only in the fertile mind of the Examiner. The conclusionary statements of the Examiner must be based upon specific evidence, suggestions and findings in the references of record relied upon by the Examiner in the rejection of the claimed subject matter. It is respectfully submitted that the record before us lacks any valid reasons to combine the references in the manner done so by the Examiner and contains unsupported reasoning suggested by the Examiner. The Examiner has not established a prima facie case of obviousness with respect to the aforesaid set of claims, there being no motivation to combine the references other than that disclosed in the Applicants' specification. "The best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or

⁵ *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ 2d 1780 (Fed. Cir. 1992), citing *In re Gorman*, 933 F.2d 982, 987 (Fed. Cir. 1991).

motivation to combine prior art references”.⁶ It is respectfully suggested that this rejection which contains neither teachings nor motivation to combine the references is without merit and must be withdrawn. Accordingly, Applicants respectfully contend that the combination of *Agrawal et al.* and *Chaudhuri et al.* does not meet the standard set by the CAFC’s interpretation of 35 U.S.C. §103(a), and respectfully requests removal of the rejection of claims 1-4, 7-11, 14-17, and 19 under 35 U.S.C. §103(a).

III. Rejection of Claims 5-6, 12-13, and 18 under 35 U.S.C. §103(a)

In the Office Action dated September 25, 2006, the Examiner rejected claims 5-6, 12-13, and 18 under 35 U.S.C. §103(a) over *Agrawal et al.* in view of *Chaudhuri et al.*, and in view of *Dageville*, U.S. Patent Publication No. 2003/0065688.

Applicants remarks made above pertaining to *Agrawal et al.* and *Chaudhuri et al.* are hereby incorporated by reference.

U.S. Patent Publication No. 2003/0065688 to *Dageville* pertains to a memory allocation for a computation associated with a query, and more specifically, to amending the memory allocation based upon changing needs to the query. However, *Dageville* does not teach or suggest the limitations of the independent claims from which it claims its dependency. To uphold a rejection under 35 U.S.C. § 103(a) for a dependent claim, all the claim limitations must be taught or suggested by the prior art.⁷ In other words, the prior art reference must teach or suggest all limitations of the dependent claim and the independent claim from which it depends. “If an independent claim is nonobvious under 35 U.S.C. § 103(a), then any claim depending therefrom is nonobvious.”⁸ As shown above, Applicants’ claims 1, 7, 13, and 19 disclose estimating the result size of a Group-By operation with a specific factors and mathematical operators. Both *Agrawal et al.* and *Chaudhuri et al.* fail to teach this mathematical model as

⁶ *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

⁷ MPEP 2143.03 (citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)).

⁸ *Id.* (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

taught and claimed by Applicants' claims 1, 7, 14, and 19. Accordingly, Applicants respectfully request that the Examiner remove this rejection and direct allowance to claims 5-6, 12-13, and 18.

IV. Conclusion

Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. Accordingly, Applicants request that the Examiner indicate allowability of claims 1-19, and that the application pass to issue. If the Examiner believes, for any reason, that personal communication will expedite prosecution of the application, the Examiner is hereby invited to telephone the undersigned at the number provided.

In light of the foregoing amendments and remarks, all of the claims now presented are in condition for allowance, and Applicants respectfully requests that the outstanding rejections be withdrawn and this application be passed to issue.

Respectfully submitted,

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